

## MODERN PORTFOLIO THEORY AND EFFICIENT FRONTIER

### THE MODERN PORTFOLIO THEORY PERSPECTIVE

#### **MODERN PORTFOLIO THEORY (MPT) APPROACHES INVESTING BY EXAMINING THE ENTIRE MARKET AND THE WHOLE ECONOMY.**

The theory is an alternative to the older method of analyzing each investment's individual merits. When investors look at each investment's individual merits, they're analyzing one investment without worrying about the way different investments will perform relative to each other. On the other hand, MPT places a large emphasis on the correlation between investments. Correlation is the amount we can expect various investments - and various asset classes - to change in value compared with each other. Here is a simple example of correlation:

A company that sells wool products like sweaters and blankets is more profitable when the price of wool is lower. A company that is a wool wholesaler is generally less profitable when the price of wool is lower, unless they are able to sell a lot more wool. Though the companies work together, their profits have a low correlation. In other words, the profitability of one company does not follow the same lines as the profitability of the other company. Sometimes they are even inversely related.

#### **RISK**

One important thing to understand about many risk calculations is that many examples treat volatility and risk as the same thing. Many illustrations commonly found on-line use risk as a measurement of the likelihood that an investment will go up and down in value - and how often and by how much. Our theory at WT Wealth Management assumes that investors prefer to minimize risk. The theory assumes that given the choice of two portfolios with equal returns, investors will always choose the one with the least risk. If investors take on additional risk, they will expect to be compensated with additional return.

#### **RISK COMES IN TWO MAJOR CATEGORIES:**

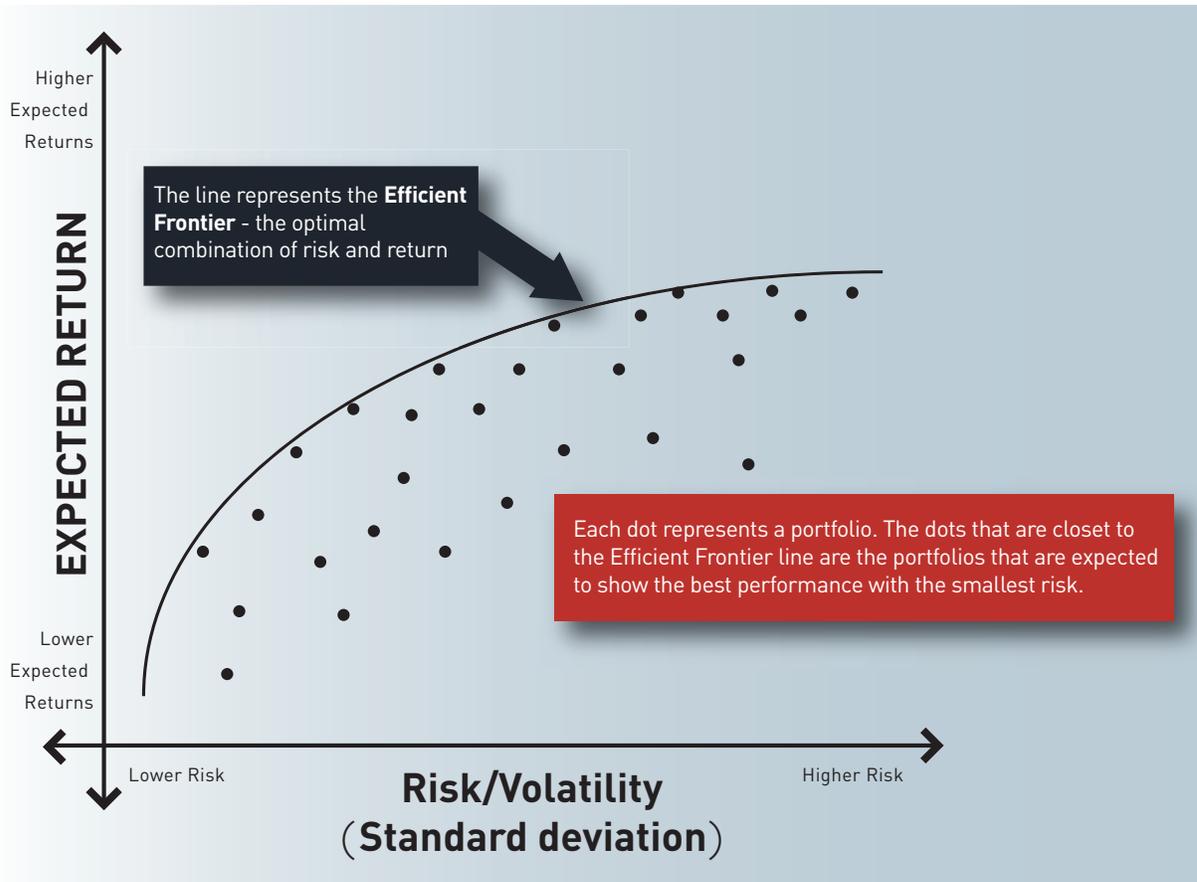
- systematic risk - the possibility that the entire market and economy will show losses negatively affecting nearly every investment; also called market risk
- unsystematic risk - the possibility that an investment or a category of investments will decline in value without having a major impact upon the entire market

Diversification generally does not protect against systematic risk because a drop in the entire market and economy typically affects all investments. However, diversification is designed to decrease unsystematic risk. Since unsystematic risk is the possibility that one single thing will decline in value, having a portfolio invested in a variety of stocks, a variety of asset classes and a variety of sectors will lower the risk of losing much money when one investment type declines in value.



## THE EFFICIENT FRONTIER

In order to compare investment options, analysts have developed a system to describe each investment or each asset class with math, using unsystematic risk statistics. Risk scores are applied to the portfolios that contain the various investment options and asset classes. We then look at the expected rate-of-return and the expected volatility for each investment. The financial services industry has commonly referred to this as The Efficient Frontier. The graph below is an example of what the Efficient Frontier equation looks like when plotted. The purpose of The Efficient Frontier is to allow investors to picture how additional risk can lead to additional returns. Remember, there is no free lunch on Wall Street



$$\text{SLOPE} = (\text{RETURN} - \text{RISKFREE RATE}) / (\text{STANDARD DEVIATION})$$

There are literally thousands of portfolios along The Efficient Frontier and investor should learn to expect smaller returns when taking smaller amounts of risk. It should be clear that for any given value of risk, you would like to choose a portfolio that gives you the greatest possible rate of return; so you always want a portfolio that lies up along the efficient frontier, rather than lower in the interior of the region. This is the first important property of the efficient frontier: it's where the best, most efficient, portfolios are.

Notice that The Efficient Frontier line starts with lower expected risks and returns, and it moves upward to higher expected risks and returns. So people with different Investor Profiles (determined by investment time horizon, tolerance for risk and personal preferences) can find an appropriate portfolio anywhere along The Efficient Frontier line. The Efficient Frontier flattens as it goes higher because there is a limit to the returns investors can expect no matter how much risk is taken.



## THE HISTORY OF MPT

In 1952, Harry Markowitz published his findings on Modern portfolio theory and The Efficient Frontier in The Journal of Finance. He continued to develop and publish research on the subject over the next twenty years, eventually winning the 1990 Nobel Prize in Economics for his work on the efficient frontier and other contributions to modern portfolio theory.

According to Markowitz, for every point on the efficient frontier, there is at least one portfolio that can be constructed from all available investments that has the expected risk and return corresponding to that point. By illustrating The Efficient Frontier it allows investors to understand how a portfolio's expected returns vary with the amount of risk taken.

The relationship securities have with each other is an important part of the efficient frontier. Some securities' prices move in the same direction under similar circumstances, while others move in opposite directions. The more out of sync the securities in the portfolio are (that is, the lower their covariance), the smaller the risk (standard deviation) of the portfolio that combines them. The efficient frontier is curved because there is a diminishing marginal return to risk. Each unit of risk added to a portfolio gains a smaller and smaller amount of return.

## WHY IT MATTERS:

When Markowitz introduced the efficient frontier, it was groundbreaking in many respects. One of its largest contributions was its clear demonstration of the power of diversification.

Markowitz's theory relies on the claim that investors tend to choose, either on purpose or inadvertently, portfolios that generate the largest possible returns with the least amount of risk. In other words, they seek out portfolios on the efficient frontier.

However, there is no one efficient frontier because portfolio managers and investors can edit the number and characteristics of the securities in the investing universe to conform to their specific needs.

Finally, be aware that all results of the Efficient Frontier are based on past price history behavior of each security, and that past history is often not an indicator of future behavior. Market conditions can change, as can managers of mutual funds and companies.

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In addition to the normal risks associated with investing, narrowly focused investments, investments in smaller companies, sector ETF's and investments in single countries typically exhibit higher volatility. International and Emerging Market ETF's investments may involve risk of capital loss from unfavorable fluctuations in currency values, from differences in generally accepted accounting principles or from economic or political instability in other nations. Emerging markets involve heightened risks related to the same factors as well as increased volatility and lower trading volume. Bonds and bond funds will decrease in value as interest rates rise. A portion of a municipal bond fund's income may be subject to federal or state income taxes or the alternative minimum tax. Capital gains, if any, are subject to capital gains tax. Diversification and asset allocation may not protect against market risk or a loss in your investment.

At WT Wealth Management we strongly suggest having a personal financial plan in place before making any investment decisions including understanding your personal risk tolerance and having clearly outlined investment objectives.

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